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(71) Applicant *(for all designated States except US)*: **LIQUI-BOX CANADA INC.** [CA/CA]; 201 South Blair Street, Whitby, Ontario L1N 5S6 (CA).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **JOHNSON, James W.,** [US/US]; 1516 Chesire Road, Delaware, Ohio 43015 (US).

(74) Agent: **OGILVY RENAULT**; Suite 1600, 1981 McGill College Avenue, Montréal, Québec H3A 2Y3 (CA).

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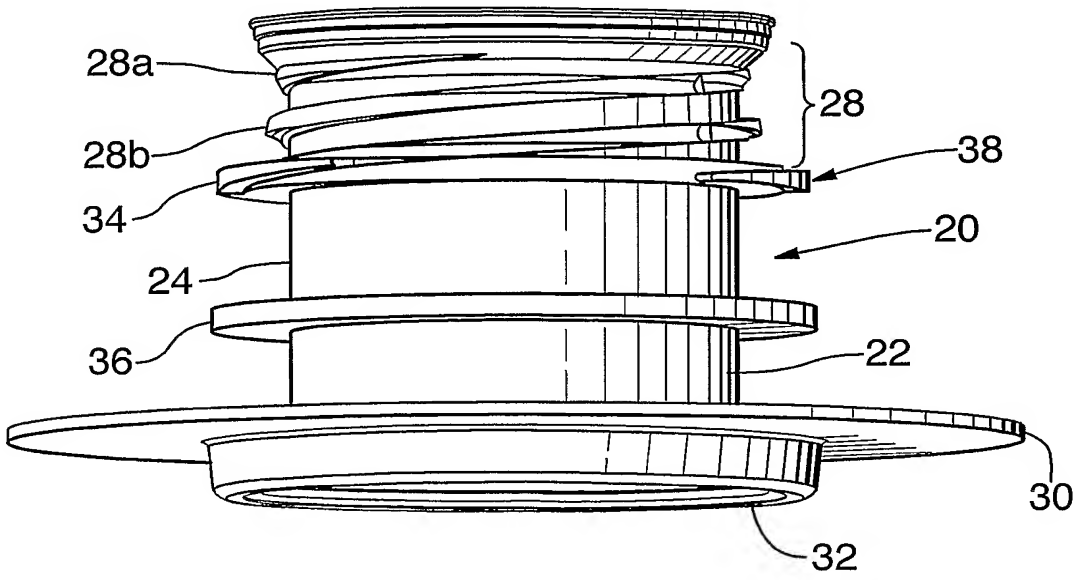
(54) Title: THREADED SPOUT



(57) Abstract: The present invention provides a spout for use with a container for holding and dispensing a fluid. The spout comprises a generally cylindrical body having an external surface capable of mating with a collar of a dispensing connector. The external surface has at least one threaded portion that is capable of mating with the internal surface of a collar of a dispensing connector.

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THREADED SPOUT

FIELD OF THE INVENTION

[0001] The present invention provides a spout for use with a collapsible bag for the dispensing of liquids and semi-liquids from the bag. More particularly the present invention relates to a threaded spout for use on a collapsible bag for dispensing of liquids and semi-liquids from the bag.

BACKGROUND OF THE INVENTION

[0002] Many systems are used for dispensing beverage syrup from a disposable package consisting of a flexible collapsible bag in a corrugated box commonly referred to as a bag-in-box dispensing package.

[0003] Generally these systems include a bag that is provided with a fitment in the form of a spout through which filling and dispensing occurs. It is generally desirable to provide a quick-disconnect coupling between the spout and the service line of the pump or other type of beverage mixing and dispensing system. Such a coupling may be carried on the spout fitment of the bag and will work in conjunction with the service line connector, and is commonly called in the art a single-service valve and coupling since it is discarded with the bag when it is emptied. This type of valve opens automatically as the line connector is connected to the spout and closes as it is disconnected therefrom to prevent syrup from draining from the bag. An example of a single-service valve is illustrated in U.S. Pat. No. 4,286,636, which shows it in combination with a dip tube.

[0004] Some systems have recently been developed that are adapted to be used with various types of service line connectors. An example of such a system is illustrated in U.S. Patent No. 6,347,785 which discloses a universal quick-disconnect coupling and valve. The fitment disclosed is adapted to be attached to a container for holding a liquid and includes a generally cylindrical spout that is capable of mating with a dispensing connector. A slider

moves axially within the spout, and has a valve mounted within it that moves from a closed position to an open position upon insertion of a dispensing connector into the slider.

[0005] The various types of service line connectors include a variety of attachment mechanisms for connecting to a spout on the container holding the liquid. Therefore it is generally required that the spouts provided on the containers are able to connect to the different attachment mechanisms. The various connecting mechanisms can lead to problems with the connection between the container and the service line. For example, cross threading may occur if the spout is not attached correctly to the service line connector, which may lead to problems with leakage of the liquid at the connection point. This is exacerbated by the fact that the material used to make these parts is deformable and hence can be easily damaged when force is applied during threading of the spout onto the connector.

[0006] It is important to recognize that the spouts and bags are one-time use products, which need to be properly installed in order to avoid spillage and leakage. These spouts and bags are generally used in typical high volume applications, such as restaurants, in which the bags can be changed up to 3 or more times a day by people of varying levels of familiarity with the equipment. Thus any improvement that ensures an easy, rapid, accurate and tight fitting connection is desirable.

SUMMARY OF THE INVENTION

[0007] The present invention provides a spout for attachment to a container for holding and dispensing a fluid. The spout comprises a generally cylindrical body having an external surface capable of mating with a collar of a dispensing connector. The external surface includes at least one threaded portion that is capable of mating with the internal surface of the collar of the dispensing connector.

[0008] More particularly, the invention provides a threaded spout for use on a collapsible bag for dispensing of liquids and semi-liquids from the bag, the spout comprising a generally hollow cylindrical body having an external surface capable of mating with a collar of a dispensing connector, the external surface includes at least one threaded portion that is

adapted to mate with the internal surface of the collar of the dispensing connector, the spout having at one end thereof a base portion for securing the spout to the collapsible bag.

[0009] The present invention may be used with a double slider fitment as disclosed in co-pending U.S. provisional number 60/458,077, now U.S. Patent Publication No. 2004-0256424-A1. It may also be used with other conventional or known fitments.

DESCRIPTION OF THE DRAWINGS

[0010] The present invention is better understood with reference to the attached description and to the following Figures, wherein:

[0011] FIG. 1 is a photographic illustration of a front perspective view of an embodiment of the threaded spout of the present invention;

[0012] FIG. 2 is a partial section of the threaded spout of Figure 1;

[0013] FIG. 2a is a portion of the threaded spout of Figure 2 which illustrates a thread arrangement;

[0014] FIG. 2b is a photographic illustration of an isometric view of the threaded spout of the invention;

[0015] FIG. 3 is a vertical cross-sectional view of the threaded spout of Figure 1;

[0016] FIG. 4 is top plan view of the threaded spout of Figure 1;

[0017] FIG. 5 is a cross-sectional view of the threaded spout of Figure 1 prior to connection to a dispensing connector; and

[0018] FIG. 6 is a cross-sectional view of the threaded spout of Figure 1 connected to a dispensing connector.

DETAILED DESCRIPTION OF THE INVENTION

[0019] In a liquid dispensing apparatus such as is used to dispense individual servings of beverages and the like, the syrups, flavourings and other ingredients are frequently supplied in collapsible containers enclosed and shipped within an outer container ("bag-in-box"). The shipping package or container is provided with a fitment that accepts a probe that is part of the dispensing apparatus in order to connect the supply of liquid to the dispensing apparatus. The fitment generally contains a valve that is actuated by the insertion of the probe of the dispensing apparatus in order to allow the liquid to flow into the dispensing apparatus. The fitment attached to the liquid container is generally termed a package connector and the probe or similar device on the dispensing apparatus that interacts with the package connector is generally termed a dispensing connector. The fitment includes a spout portion that is attached to the container and has an external surface that connects with an internal surface of the dispensing connector.

[0020] The invention will be illustrated by reference to the drawings which illustrate a preferred embodiment thereof.

[0021] With reference to Figures 1-4, the present invention provides a spout, illustrated generally at 20 for attachment to a container (not shown) for holding a liquid (not shown). The spout 20 comprises a generally cylindrical body 22 having an external surface 24 and an internal surface 26. Located on the external surface 24 is threaded connecting means 28 that is operable to connect with an internal surface of a dispensing connector (not shown).

[0022] Each of the components of the threaded spout 20 will now be described with reference to the preferred embodiment of the present invention. As can be seen in Figures 1 through 4 the spout 20 has a body 22 that is generally a hollow cylindrical shape and has an external surface 24 capable of mating with a collar of a dispensing connector. At one end of the spout 20 there is a base portion 30 for attaching the spout to a wall of a container, not illustrated. Methods and means for attaching the base portion 30 to a wall of a container are well known in the art and it will be understood that a variety of attachment mechanisms may

be used to secure the spout of the present invention to a container wall, such as by welding, heat sealing or adhesive attachment.

[0023] Located at the opposing end of the spout 20 from the base portion 30 is the spout opening 32 which is adapted to receive a dispensing connector therein (not shown). As will be understood by a person skilled in the art, the spout 20 may be used as part of a fitment (not shown) that includes a slider (not shown) located within the spout 20. An example of a suitable fitment and slider can be found in, but is not limited to, those described in Applicant's co-pending US Provisional No. 60/458,077 the disclosure of which is herein incorporated by reference in its entirety. The internal surface 26 of the spout 20 may include an integrally molded stop ridge (not shown) and sealing rings (not shown), both of which may serve to limit the motion of the slider at certain stages in the functioning of the coupling and dispensing valve. The stop ridge and sealing rings are further described in U.S. Patent No. 6,347,785 (Copp et al.) the disclosure of which is herein incorporated by reference in its entirety.

[0024] The external surface 24 of the spout 20 includes threaded connecting means 28 for connecting with the internal surface of a dispensing connector 100 (See Figures 5 and 6). In one embodiment the threaded connecting means 28 comprises two opposing threads (28a and 28b) (See Figure 2b) which are adapted to mate with corresponding threads on an internal surface of a collar of a dispensing connector to which the spout 20 of the present invention may be connected. Alternatively the thread arrangement is such that a clamp connector may be secured to the threaded arrangement 28. The lower portions of the opposing threads are located on either side of the spout 20, extend around the external surface 24 of the body 22, and extend into a first external flange at an area generally indicated at 38 in Figure 2b. The opposing threads 28a, 28b, are preferably of equal geometries, for example size and configuration. The opposing threads 28a, 28b are arranged generally to allow for a greater lead-in to the threads on the internal surface of the collar of the corresponding dispensing connector 100 to which the spout 20 is to be connected. This lead-in substantially reduces the occurrence of cross threading that is known to occur with spouts used in the art such as spout

configurations with tabs. The thread pitch and angle are selected to cooperate with the opposing threads to ensure positive engagement every time. The lower portion of the threads are preferably tapered. The tapering of the lower portion of the threads enables a user to ensure sufficient tightening of the spout 20 to the connector 100.

[0025] As discussed above, the design of the spout 20 including the opposing threads substantially reduces the cross-threading that can occur when known spouts used in the art are connected to different types of dispensing connectors.

[0026] As seen in Figures 1-3 the external surface 24 also includes the first external flange 34 and a second external flange 36. The second external flange 36 may also include at least two wings (not shown) extending outwardly therefrom and described further below. Both the first external flange 34 and the second external flange 36 are operable to mate with different dispensing connectors.

[0027] It will be understood by a person skilled in the art that additional attachment means may be used on the external surface 24 of the spout 20 to connect it to various dispensing apparatus with which it is to be used. Examples of such attachment means can be found in Applicant's co-pending U.S. Provisional Application No. 60/458,077, illustrated in Figures 8-10. For example, a flange may be used that cooperates with a mounting frame of one type of dispensing connector. Alternatively a pair of wings may be attached to at least one flange located on the external surface that will cooperate with an external frame of a different type of dispensing apparatus. An example of such wings is described in further detail in U.S. Application No. 10/076,572 (Davis et al.) the disclosure of which is herein incorporated by reference in its entirety.

[0028] The use of spout 20 with a dispensing connector 100 will now be described with reference to Figures 5 and 6. Figure 5 illustrates the initial position of one type of dispensing connector 100 having a threaded collar 102. The threaded collar 102, having internal threads 104 is positioned to engage the threaded connecting means 28 on the external surface 24 of the spout 20. The probe 108 of the dispensing connector 100 is sized to fit in sealing

engagement within the body of the spout 20. Figure 6 illustrates the position of the dispensing connector 100 when threadingly engaged with the spout 20. As can be seen the threading engagement of the threaded collar 102 with the threaded connecting means 28 provides an accurate and tight fitting connection.

[0029] It will be understood by a person skilled in the art that the spout 20 may be used with different fitments (not shown) and various dispensing connectors. Examples of fitments and additional dispensing connectors with which the spout 20 may be used include, but are not limited to, those illustrated in co-pending U.S. Provisional Application 60/458,077. Other examples of dispensing connectors to which the spout 20 may be connected include the DuPont Liquid Packaging Systems QCD II and QCD 2 (known in the trade as the QCD fitments) as well as the Rapak PCS-1, a clamp-type connector. It will be understood by a person skilled in the art that the spout 20 may be used to connect to a dispensing connector that does not include a threaded collar.

[0030] The spout 20 of the present invention may be made from any suitable material known by persons skilled in the art. For example, the spout 20 may be made from any suitable plastic, in particular any plastic suitable for injection molding, which will be known by a person skilled in the art. Examples include, but are not limited to, linear low density polyethylene and polypropylene.

[0031] Although the invention has been described in terms of a particular preferred embodiment thereof, the skilled practitioner will understand that the external surface can include additional configurations needed to accept and mount a dispensing connector. Appropriate flanges, grooves, threads, or the like can be formed on the external surface 24 of the spout 20 as required to contact mating elements on a dispensing connector. The spout 20 may be used in combination with several fitments, for example a fitment that has an internal adapter sleeve that may have a plurality of different internal diameters in different axial regions of the sleeve in order to accommodate a plurality of different dispensing connectors.

Claims

1. A threaded spout for use on a collapsible bag for dispensing of liquids and semi-liquids from the bag, the spout comprising a generally hollow cylindrical body having an external surface capable of mating with a collar of a dispensing connector, the external surface includes a threaded portion which comprises two opposing threads adapted to mate with the internal surface of the collar of the dispensing connector, the lower portions of the threads are located on either side of the spout, extend around the external surface of the spout, and extend into an upper flange on the external surface, the spout having at one end thereof a base portion for securing the spout to the collapsible bag.

2. A threaded spout as claimed in Claim 1 wherein the opposing threads are of equal geometries.

3. A threaded spout as claimed in Claim 2, wherein the opposing threads are spaced from each other on the external surface to provide a lead-in to the internal surface of the collar of the dispensing connector.

4. A threaded spout as claimed in Claim 3, wherein the lower end of each thread is tapered.

5. A threaded spout as claimed in Claim 4, wherein the internal surface of the collar is cooperatively screw threaded for securing the nozzle thereto.

6. A threaded spout as claimed in Claim 4, wherein the internal surface of the collar is adapted to clamp around the opposing threads of the nozzle to secure the nozzle thereto.

7. A spout as claimed in Claim 4, wherein the two opposing threads extend from and form part of an upper external flange located on the external surface of the spout, and the external surface includes a second external flange located beneath and spaced from the upper external flange, and towards a base portion of the spout, the external area between the flanges on the spout being arranged to engage a collar of a connector in a push-fit manner.

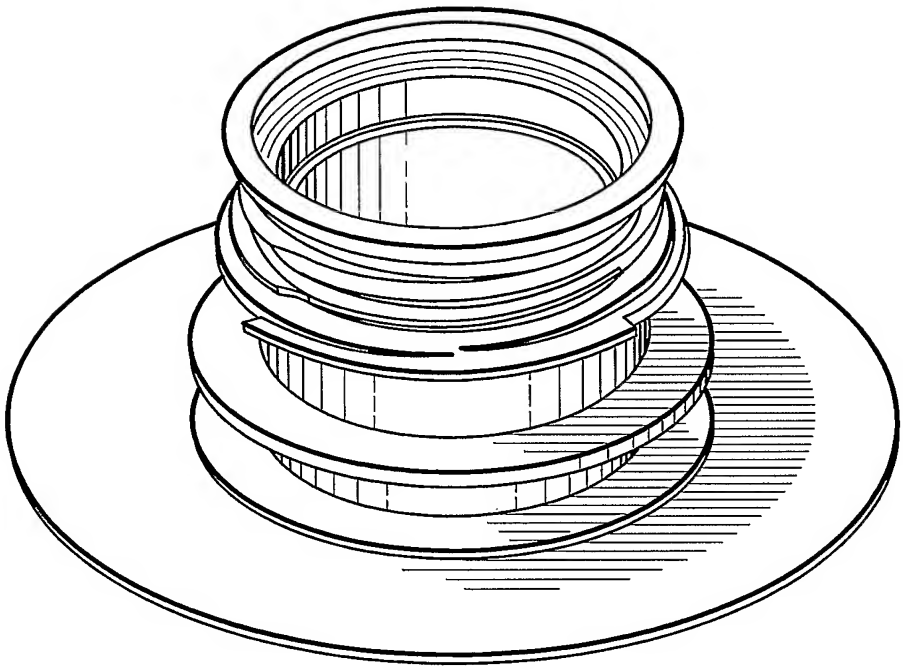


FIG.1

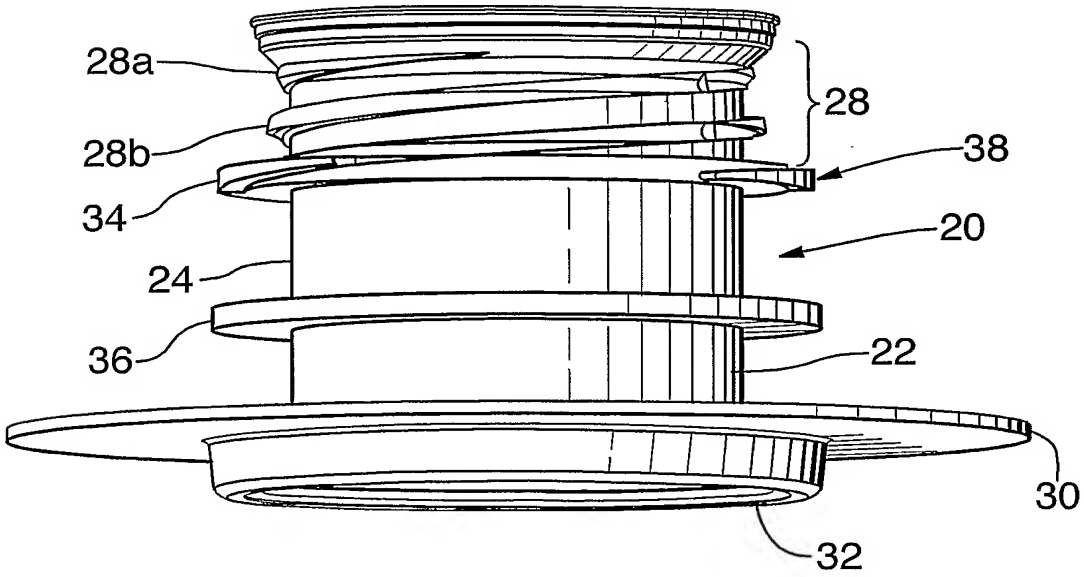


FIG.2B

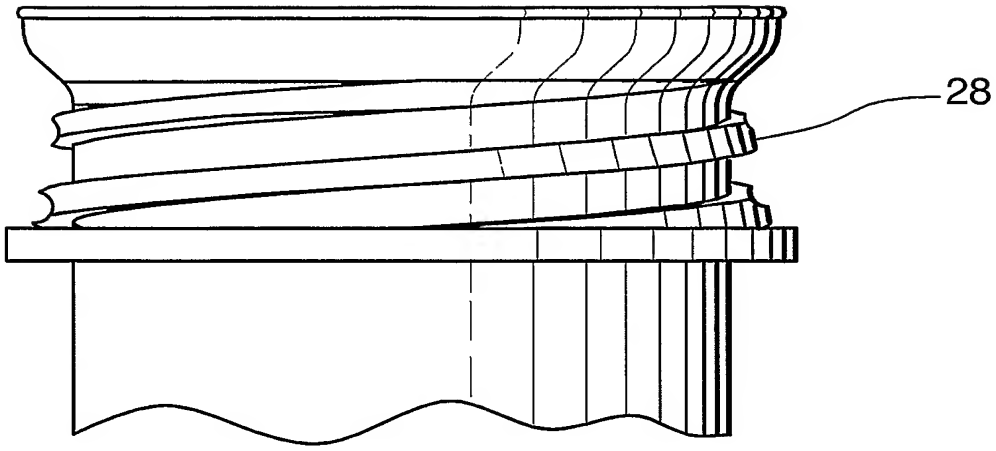


FIG.2A

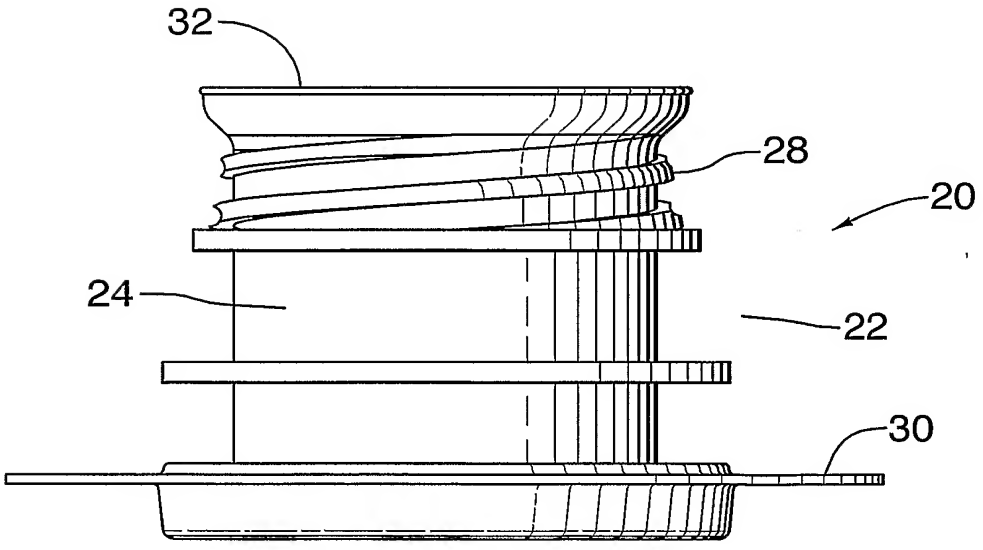


FIG.2

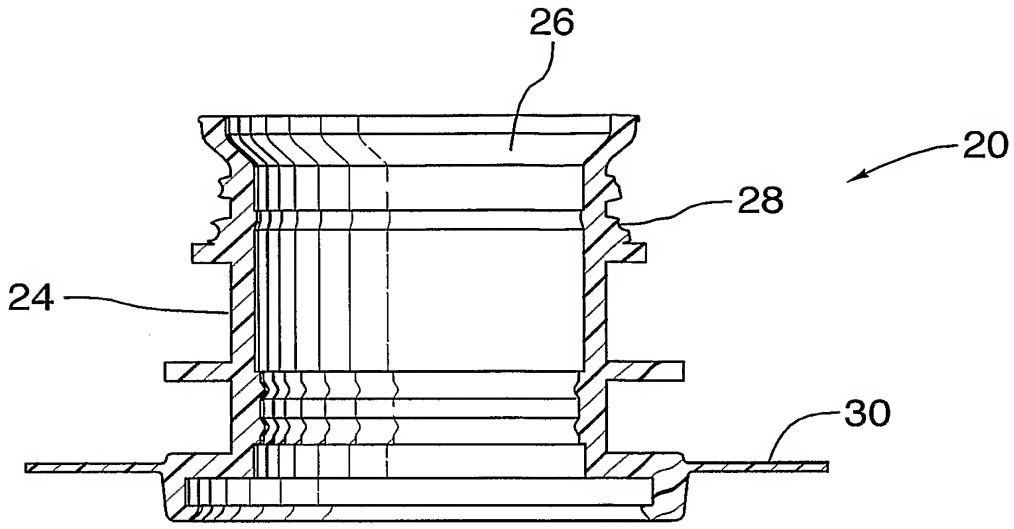


FIG.3

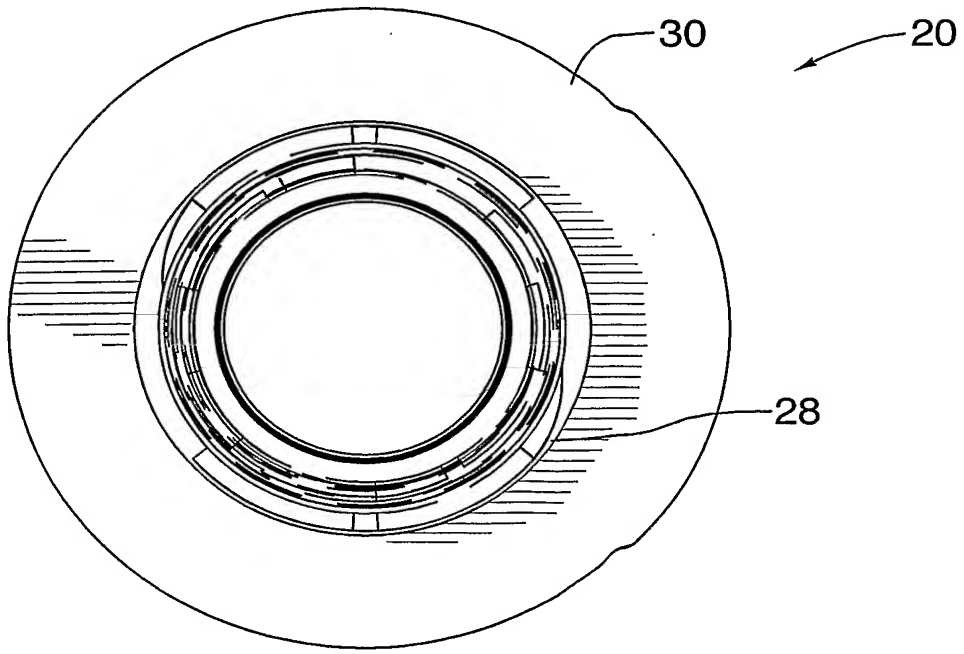
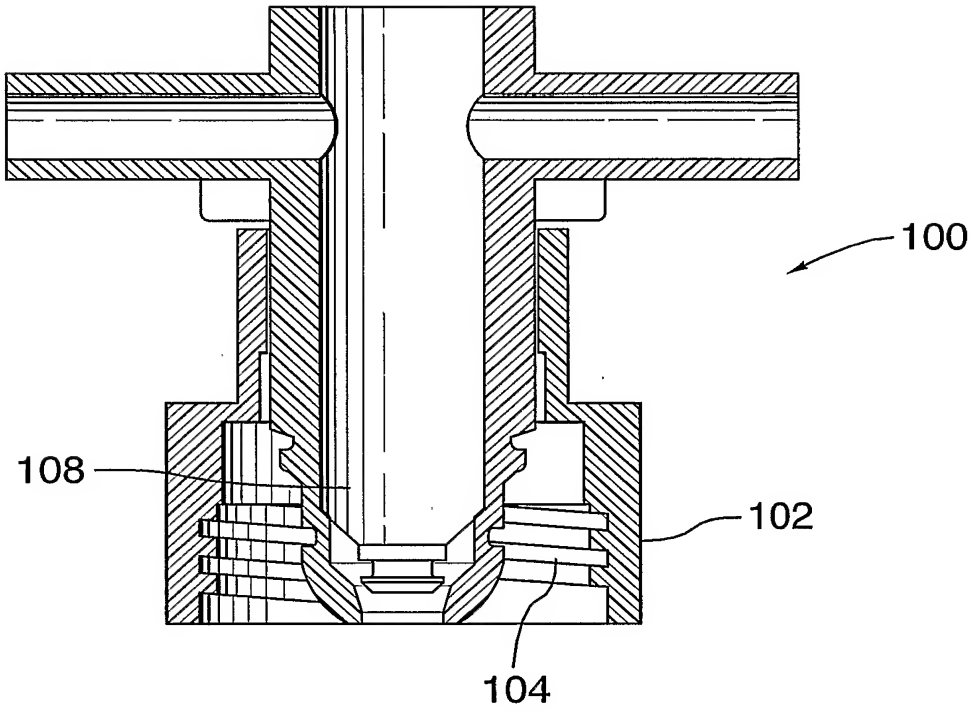


FIG.4



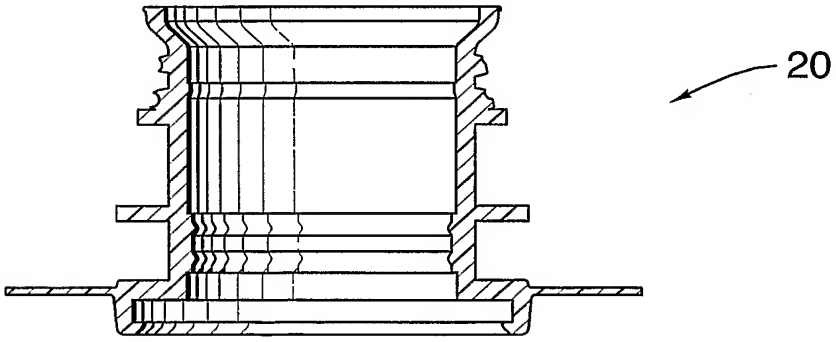


FIG.5

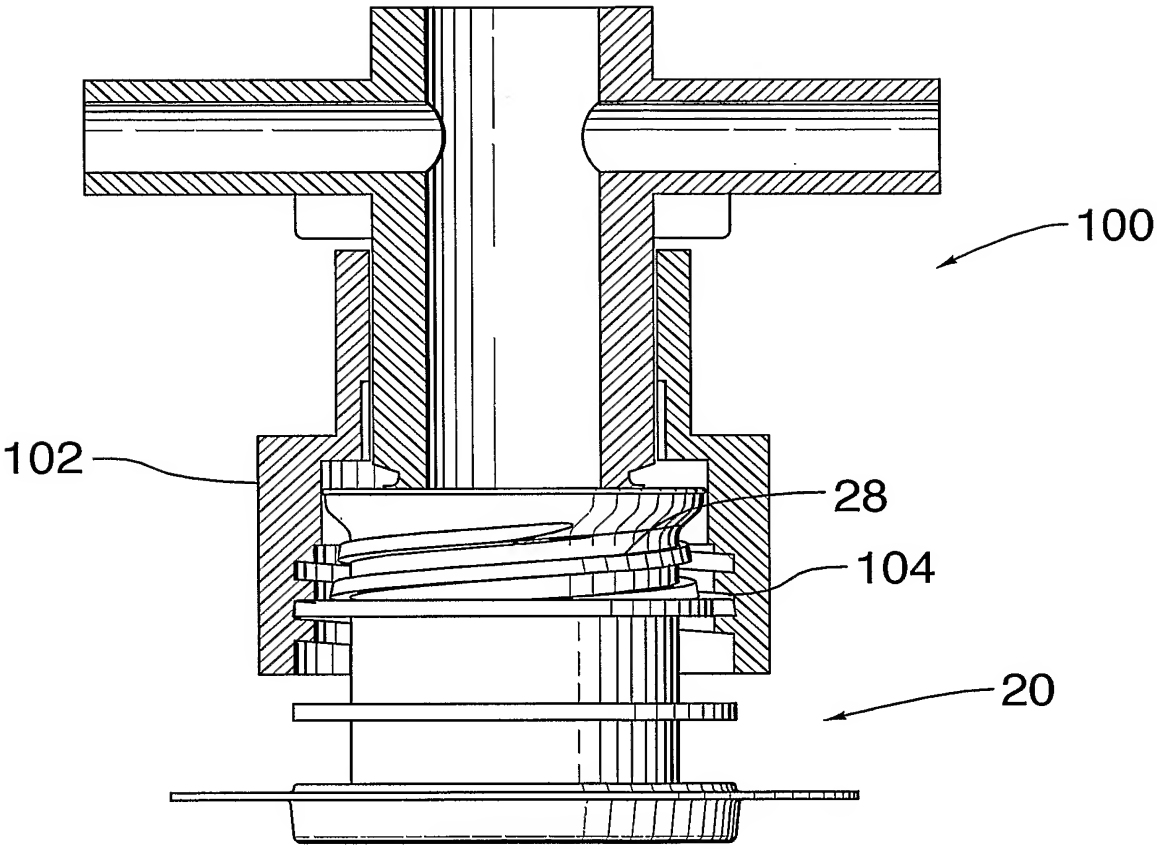


FIG.6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2005/000133

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7): B65D-33/38
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(7): B65D-33/38, F16L-19/00, F16L-29/00, F16L-15/06
USPC: 285/377, 376, 363, 401, 402, 361, 362, 398; 141/346; 222/569, 519, 522

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC: 210/38 - 210/41; 285/1 - 285/62; 284/1 - 284/11

Electronic database(s) consulted during the international search (name of database(s) and, where practicable, search terms used)
Delphion, esp@cenet, Canadian Patent Database
Keywords: bag, container, spot, fitment, thread, opposing, geometries, dispensing, connector

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No(s).
Y	US 6,347,785 B1 (COPP, D. et al.) 19 February 2002 (19-02-2002) * Col. 3, lines 32-53; Figs. 3, 4A, 4B *	1-7
Y	CA 2,062,008 A1 (LUCH, D. et al.) 06 September 1992 (06-09-1992) * Page 5, lines 27-33; Figs. 2-4 *	1-7
A	CA 2,462,500 A1 (ADAMS, B.) 15 May 2003 (15-05-2003) * Whole document *	1-7

[ ] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
21 March 2005 (21-03-2005)	17 May 2005 (17-05-2005)
Name and mailing address of the ISA/CA Canadian Intellectual Property Office Place du Portage I, C114 - 1st Floor, Box PCT 50 Victoria Street Gatineau, Quebec K1A 0C9 Facsimile No.: 001(819)953-2476	Authorized officer Krystyna Bielunska (819) 934-3416

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA2005/000133

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TITLE: THREADED SPOUT
PUBN-DATE: August 18, 2005

INVENTOR-INFORMATION:

NAME	COUNTRY
JOHNSON, JAMES W	US

ASSIGNEE-INFORMATION:

NAME	COUNTRY
LIQUI BOX CANADA INC	CA
JOHNSON JAMES W	US

APPL-NO: CA2005000133
APPL-DATE: February 3, 2005

PRIORITY-DATA: US54170204P (February 3, 2004)

INT-CL (IPC): B65D033/38

ABSTRACT:

CHG DATE=20050830 STATUS=O>The present invention provides a spout for use with a container for holding and dispensing a fluid. The spout comprises a generally cylindrical body having an external surface capable of mating with a collar of a dispensing connector. The external surface has at least one threaded portion that is capable of mating with the internal surface of a collar of a dispensing connector.